

EDUCATION FOR SUSTAINABILITY (Efs)
STANDARDS AND PERFORMANCE INDICATORS
(Version 2.0)

A. Cultural Preservation and Transformation

How the preservation of cultural histories and heritages, and the transformation of cultural identities and practices contribute to sustainable communities.

Students will develop the ability to discern with others what to preserve and what to change in order for future generations to thrive.

B. Responsible Local/Global Citizenship

The rights, responsibilities and actions associated with leadership and participation toward healthy and sustainable communities. Students will know and understand these rights and responsibilities and assume their roles of leadership and participation.

C. The Dynamics of Systems & Change

A system is made up of two or more parts in a dynamic relationship that forms a whole whose elements 'hang together' and change because they continually affect each other over time. Fundamental patterns of systems include growth, decline and vacillation. Students will know and understand the dynamic nature of complex systems and change over time. They will be able to apply the tools and concepts of system dynamics and systems thinking in their present lives, and to inform the choices that will affect our future.

D. Sustainable Economics

The evolving theories and practices of economics and the shift towards integrating our economic, natural and social systems, to support and maintain life on the planet. Students will know and understand 21st century economic practices and will produce and consume in ways that contribute to the health of the financial, social and natural capital.

E. Healthy Commons

Healthy commons are that upon which we all depend and for which we are all responsible (i.e., air, trust, biodiversity, climate regulation, our collective future, water, libraries, public health, heritage sites, top soil, etc.). Students will be able to recognize and value the vital importance of the commons in our lives and for our future. They will assume the rights, responsibilities and actions to care for the

commons.

F. Natural Laws and Ecological Principles

The laws of nature and science principles of sustainability. Students will see themselves as interdependent with each other, all living things and natural systems. They will be able to put their knowledge and understanding to use in the service of their lives, their communities and the places in which they live.

G. Inventing and Affecting the Future

The vital role of vision, imagination and intention in creating the desired future. Students will design, implement and assess actions in the service of their individual and collective visions.

H. Multiple Perspectives

The perspectives, life experiences and cultures of others, as well as our own. Students will know, understand, value and draw from multiple perspectives to co-create with diverse stakeholders shared and evolving visions and actions in the service of a healthy and sustainable future locally and globally.

I. A Sense of Place

The strong connection to the place in which one lives. Students will recognize and value the interrelationships between the social, economic, ecological and architectural history of that place and contribute to its continuous health.

NOTE: In all of these sections below, each is preceded by "Students will..."

A	Cultural Preservation and Transformation
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How the preservation of cultural histories and heritages, and the transformation of cultural identities and practices contribute to sustainable communities. Students will develop the ability to discern with others what to preserve and what to change in order for future generations to thrive.

Biosphere/Ethnosphere Connection

1. Demonstrate an understanding about the interrelationships between the health of the biosphere and the health of the "ethnosphere" and how losses and gains to

both influence one another over time.

2. Explain the significance of language loss and language recovery on the health of cultures.

3. Articulate why it is important that cultures do not fade away, and research examples of efforts to move toward sustainability by saving endangered cultures and languages.

Tradition and Change

4. Develop an understanding of cultural influences on the ability of people to live well in their places over time. Particular attention will be paid to what should be preserved and what has to change in order to thrive over time.

5. Transfer knowledge from lessons learned about changes in their own communities to changes in local communities throughout the world and draw conclusions about similarities and differences.

6. Consider the benefits of cultural homogeneity and of cultural diversity to the sustainability of a community in a place over time.

Arts and Culture

7. Recognize the value of stories and the arts as links between the past and present.

8. Use stories and the arts to document and making visible what we want to preserve and what needs to change in order to contribute to the sustainability of our communities in our places over time.

B	Responsible Local and Global Citizenship
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1. Articulate the rights and responsibilities of democratic participation and leadership in both local and global contexts.

2. Demonstrate individual and collective respect for themselves and the commons.

3. Broaden their concept of participation in government, in their present and future lives, to encompass both the formal political realm and civil society.

4. Analyze the relationship between the formal language used to define and perceive citizens' roles and responsibilities and the behaviors and actions related to social, civic and political entities. They will apply this understanding to effectively formulate and communicate their ideas through a variety of media.

5. Draw from diverse perspectives of participation and governance to form an opinion about the requirements of responsible local, national and global citizenship.

6. Demonstrate their awareness of human choices and their consequences, using

their own choices as exemplars.

7. Illustrate their understanding of the importance of equity, cooperation, teamwork, conflict resolution and consensus building in addressing regional and global challenges.

8. Explore, review and critique multiple forms of governance, including examples from community, local, national, regional and international levels. They will communicate their understanding of the importance of international exchange, international organizations and international agreements in creating arenas in which these multiple forms of governance can address issues together.

9. Demonstrate "upstream problem identification" and systems thinking by addressing local and

global issues/problems or protecting local/global assets through civic engagement in the service of a healthy and sustainable future.

10. Determine and articulate a group decision making process and make a collective decision that is vision oriented and that solves more than one problem at a time and minimizes new problems.

11. Develop their sense of efficacy by expanding their understanding of their legitimate voice and by developing advocacy skills.

12. Demonstrate their ability to integrate their knowledge, skills and values by authentically applying what they have learned to their own lives and their communities.

C	The Dynamics of Systems & Change
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Systems as the Context for Thinking and Action

1. See both the whole system and its parts, as well as place themselves within the system

2. Define what a system is and if things are or are not systems.

3. Be able to step back and see the big picture.

4. See and be able to describe the interrelatedness of at least two variables.

5. Be able to illustrate that what we see happening around us depends on where we are in the system (perspective consciousness).

6. Identify simple and complex systems in everyday life by recognizing specific parts of these systems and describing their interdependence.

7. Perceive patterns within the system that connect the parts of the system to one another and to other systems over time.

8. See patterns over time and go beyond them to define structures within systems.

9. Be able to readily see underlying systemic structures and key inter-relationships.
10. Transfer the knowledge of structure and behavior in one system to another system.
11. Be able to read and understand a more complex system dynamics model and tell a story from it.
12. Effectively communicate an understanding of the structures and behaviors of systems by applying, and transferring the use of, the tools and concepts of systems thinking and the dynamics of systems and change in the study of a variety of systems over time.
 - Structures and Behaviors e.g., Overshoot and Collapse, Exponential Growth and Decline, Oscillation; Delays, Thresholds, Patterns Over Time, Feedback, Stocks and Flows, Reinforcing and Balancing Loops, Emerging Properties and Regenerative Capacity.
 - Tools e.g. Fixes that Backfire Archetype, Shifting the Burden Archetype, Tragedy of the Commons Archetype, Healthy Commons Archetype, Behavior Over Time Graphs, Entry Points, Leverage Points, Causal Loop Diagrams, Stock and Flow Diagrams and Dynamic Modeling.
13. Demonstrate an understanding that there is no such thing as a closed system. All systems are nested in other systems.
14. Demonstrate an understanding that systems are dynamic; they develop and change over time.
15. Recognize that a highly functioning team or group that represents diverse perspectives can enable us to recognize interdependencies in systems.
16. Create and know how to facilitate and participate in highly functioning teams or groups that represent diverse perspectives which enable us/them to recognize interdependencies in systems.
17. Make choices and decisions and takes action (s) that maximize the health of the whole system upon which the specific part (s) depend (s).

Intergenerational Responsibility

18. Take responsibility for the effect (s) of their actions on future generations
19. Understand and operate knowing that one person's gain is interdependent with everyone's gain—one player's folly can lead to folly for all.
20. Distinguish between long term and short term goals.
21. Pay attention to the short term and give voice to the long term gains and affects of his/her choices and actions as well as the choices and actions of others.

22. Take responsibility for the fact that the well being of future generations is largely dependent upon the choices and decisions he/she makes (as well as the choices and decisions of others) during his/her lifetime.
23. Take responsibility for his/her choices/actions and are accountable to systemic and future consequences (on self, others and physical, social and biological commons) of choices he/she makes today by making responsible choices and decisions and taking actions that reflect whole systems thinking.
24. Choose, design, plan, make decisions and act in ways that will benefit the "7th generation."

Implications and Consequences

25. Consciously make choices, read feedback and plan actions to achieve positive systemic impact.
26. Identify and define reinforcing and balancing feedback loops within a system.
27. Track existing causal relationships [feedback loops] within the system and over time.
28. Define how their own (or other peoples) actions affect the systems they are in.
29. Demonstrate an understanding of how one event can influence another.
30. Demonstrate that cause and effects are not closely related in time and space in a system (there are delays in systems).
31. Reasonably predict intended consequences, and reasonably predict and prepare for unintended consequences.
32. Make choices by considering implications and consequences of those choices on the economic, ecological and social systems within which he/she lives.

Driving Forces and their Impacts

33. Recognize and can act strategically and responsibly in the context of the driving forces that influence our lives
34. Feel connected to and are constantly learning about the trends and driving forces within and between the social, economic and ecological systems of which he/she is a part.
35. See the relevance in, and regularly identify internal and external forces that have consequences and could influence the goals [outcomes] toward which she/he is working and makes choices, takes decisions and acts accordingly.
36. Recognize that problems and their solutions are endogenous: they arise within a system, not from outside.

Strategic Responsibility

37. Assume responsibility for one's self and others by envisioning, designing, planning acting and assessing with whole systems in mind
38. Recognize that a system's structure generates its behavior and automatically focus on "upstream" problem identification and structural /design flaws instead of assigning blame in an effort to meet challenges and solve problems in the context of a shared vision of a sustainable future.
39. Identify leverage points by determining which leverage points have the greatest impact and which have the least so that he/she can identify where to intervene in the system (s) for the best possible impact on the system (s) consistent with the stated goal (s).
40. Work strategically on leverage points in the system he/she is influencing in order to achieve the best possible impact on the system (s) consistent with the stated goal (s) and matches one or more leverage points with his/her own skills, sphere of influence and passion by taking an action (series of actions) which play (s) a significant role in strategically leveraging change in and/or to the system.
41. Ask probing questions when things do not turn out the way we planned.
42. Make strategic choices and decisions and take strategic actions that reflect structural, whole system designs (win win win...) in the context of a shared vision of a sustainable future.

Shifting Mental Models and Paradigms

43. Recognize mental models and paradigms as guiding constructs that change over time with new knowledge and applied insight.
44. Recognize/identify mental models and paradigms and constantly identify and question assumptions; explore the "automatic response" nature of our assumptions.
45. Demonstrate an awareness of how mental models limit our thinking.
46. Pay vigilant attention to our habitual patterns of thinking (mental models, paradigms, unquestioned assumptions, resignation, etc.).
47. Recognize/identify how mental models and paradigms affect current reality and create our futures.
48. Recognize that all models are working hypotheses to be rigorously built, tested and refined.
49. Illustrate the power of habits, paradigms and values in identifying problems, gathering data and making decisions.
50. Consider an issue fully and resist the urge to come to a quick conclusion.
51. Evolve/alter/improve mental models and paradigms when proven necessary and communicate the value of the new mental model and paradigm.
52. Hold the tension of paradox and controversy without trying to resolve it

quickly.

D	Sustainable Economics
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1. Compare and contrast the histories, philosophies and patterns of different economic systems and activity and their effects on the environment, equity, prosperity and the diversity of cultures.
2. Illustrate their understanding of the relationships between ecological, economic and social systems.
3. Conduct life cycle analyses on several products and calculate the "full cost" of those product's life cycles to our health, the health of our communities, our economy and the natural systems.
4. Apply systems thinking and systems tools to identify patterns, impacts, connections, and relationships between a product's life cycle and the health of the system as a whole. Embed their understanding of the Materials Cycle principle in their work.
5. Articulate how the sustainability of earth's natural, economic, and social systems is affected by human choices about consumption, production, distribution, and disposal of goods and services
6. Calculate what the buying power of their generation is per year and take responsibility for contributing to a sustainable future by changing their consumption patterns.
7. Envision how their choices as individuals and as members of school, family, club, neighborhood, business, town, and prospective professional communities can contribute to the viability of a sustainable future.
8. Study sustainable economic indicators and sets, determine a criteria for their use regionally, and design and name a sustainable economic indicator set that would contribute to the sustainability of their region using existing indicators and indicator sets as exemplars.

E	Healthy Commons
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1. Define "the commons" in their own words and in relation to their own experience. Distinguish between public, private and common and provide examples of how the latter can overlap with the first two.
2. Articulate the distinguishing characteristics of a commons and the types of measures required to keep different types of commons healthy.
3. Identify several examples of commons in their school, town and in our world and explain how those commons function—i.e., the rules for access and use and who or

what enforces them.

4. Research healthy commons locally and/or globally and compare and contrast the various ways people use, protect and care for them.

5. Develop criteria that they can use [discuss ways] to reconcile the conflicts that exist between our individual rights and our responsibilities as citizens to tend the commons, in relation to specific commons.

6. Explain the circumstances in which a commons can become "tragic". Examine limited versus unlimited commons, and totally open access versus a system of law and/or social norms designed to keep a commons healthy. Posit whether private property can be tragic too.

7. Engage regularly with some of the questions that need to be asked about the tenure, welfare and future of the commons; has some ideas, solutions and/or thoughts about them

F	Natural Laws and Ecological Principles
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1. Describe the role and interconnection of sub components (terrestrial, aquatic, marine, and atmospheric) of our environmental system that support life on earth. This includes the relation of high quality and abundant water, soil and air essential to support all life.

2. Explain the nature of ecosystems and biomes, their health and their interdependence within the biosphere.

3. Provide examples of the dependence of humans on our shared natural resource base for life, sustenance and a suitable quality life. (Food, shelter, health, aesthetics).

4. Clarify the importance of a great diversity of life (biodiversity) to the long term sustainability of humankind and other living species on Earth.

5. Demonstrate their understanding that there are limits to growth on the planet based on the limits of biological capacity and replenishment rates of sources and sinks, and that these limits affect our social and economic systems and can be tapped through innovation.

6. Articulate the implications of the distribution, acquisition, depletion and renewal of resources in determining the nature of societies and the rate and character of economic and social development.

7. Make a case for why global citizens should understand the basic natural laws and principles including:

a) the laws of thermodynamics

- b) the basic principles of ecology
- c) carrying capacity
- d) appropriate scale
- e) materials cycle
- f) energy flows
- g) systems develop
- h) material value (value in order)
- i) photosynthesis

G	Inventing and Affecting the Future
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Engage in Visioning, Creativity and lateral thinking

1. Develop visioning skills to create a healthy and sustainable future.
2. Set goals; develop indicators (rubrics, checklists, quantitative measures) to measure the extent to which they are moving toward or away from their goals.
3. Distinguish goals from indicators (problems from symptoms).
4. Identify the most upstream problems to address within their sphere of influence.
5. Utilize lateral thinking skills ("out of the box" thinking) to address problems in the service of their vision.
6. Demonstrate the habit of turning problems into opportunities to make positive change.
7. Make a contribution that solves more than one problem at a time and minimizes the creation of new problems. (Create value.)
8. Compare and contrast several indicator sets that are being used to measure the degree to which individuals, communities, and nations are on a path toward sustainability.
9. Develop a vision and a set of sustainable community indicators for their own community.

Tap their Passion

10. Demonstrate the use of different learning strategies to increase their ability to understand information and ideas.
11. Work hard to achieve their goals.
12. Practice and continuously improve their work.
13. Look for challenges that foster learning and growth and that increase capabilities.
14. Articulate their strengths and limitations.

15. Exhibit the drive to discover new territory.

Persevere

16. Try, succeed or fail, reflect, continuously improve, try again, keep trying, never give up, never give up, never give up.

17. Develop the habit of overcoming distractions, obstacles, fatigue, boredom, and frustration to be successful.

18. Risk failure if they want to succeed—and that they can learn a lot from their mistakes (especially what *not* to do the next time).

19. Exhibit tenaciousness, resilience, and drive to reach individual and collective goals, despite setbacks.

20. Exhibit the will power and the discipline they need to succeed.

Accept and Take Risks...

21. Do things they haven't done before because that is what it takes to accomplish their goals, solve a problem or be true to their passion. They will reflect on the fact that that is how they learn and grow.

22. Tolerate the discomfort and uncertainty that learning brings.

23. Appreciate change in their lives.

24. Embrace making change, improving, innovating, and experimenting.

25. Engage in new experiences in "unknown territory," for the purpose of reaching their goals.

26. Explain the inevitable relationship between risk and change in their lives.

27. They will display the courage to try new things and reflect on what it feels like to put themselves in a vulnerable position when they do.

28. Describe cases in which trying new things was required to do what they wanted to do, and to be who they want to be.

29. Demonstrate the willingness to do things before everyone else is ready to do them if that is what it takes to pursue their passion.

30. Be good at calculating and minimizing the risks they are taking.

Find Strength in Individuality...

31. Determine their own destiny. Make the decisions that will shape their future and adjust and improve on those decisions based on their experience, new knowledge, and applied insights.

32. Know who they are, recognize, and take responsibility for, the unique contribution they make.

33. "Walk the path" that they have made for themselves. If their path doesn't

take them where they want to go, they are prepared to make a new and better one.

Develop Self-Efficacy...

34. Believe in their ability to succeed.

Take Responsibility...

35. Be accountable for their actions (and inaction) as well as predict and be accountable for the long and short term consequences of those actions.

H	Multiple Perspectives
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Appreciate Diversity

1. Recognize and work to dismantle prejudice, and discrimination.
2. Demonstrate the ability to communicate and collaborate cross-culturally.
3. Recognize and value the strength in diversity.
4. Articulate and demonstrate appreciation for cross cultural similarities and differences.
5. Recognize self worth and rootedness in one's own culture and community.
6. Demonstrate their ability to truly value and learn from the life experiences and cultures of others.
7. Demonstrate the ability to work with people who present different perspectives and to synergistically communicate and cooperate to create shared visions, understandings and policies far richer than anything that could have been achieved alone.

Develop Perspective Consciousness

8. Articulate all sides of an issue with a strong basis for understanding bias and the other points of view.
9. Develop the capacity to empathize (experience the outlook and emotions) of another being by putting themselves "in their shoes" and expressing what it is like to see the world from that perspective.
10. Identify their own mental models about the world and recognize that mental models are guiding constructs that change over time with new knowledge and applied insight.
11. Develop the ability to truly understand and respect, if not agree with, the conclusions of others, and be able to see the relationship of those conclusions to the person's experiences, needs, values and goals.

12. Seek to determine the interests that underlie people's positions and behaviors.

I	Sense of Place
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The Bio-Region

1. Draw the parameters of their bio-region (watershed) and/or community, identify and list the characteristics of that bio-region, and make a case for why it is important to be able to do so.
2. Transfer their knowledge and skills of this bio-region to their study of other bio-regions.
3. Identify flora, fauna and geologic formations in the bio-region, describe their interdependencies and the benefits and threats to them and us associated with our human behavior.
4. Identify and Map the habitats and overlaying the human development/settlement patterns within the bio-region, assess the consequences over time and recommend and evaluate alternatives when necessary.
5. Identify and describe livelihoods associated with the development of the bio-regional economy.
6. Map assets and liabilities in their local community (ex. Green Map)

Social and Ecological Memory

7. Document the heritage and current character of the place in which they live, and present their research and a vision for the future of that place to an authentic audience.
8. Research, gather and collect stories through interviews with community members.
9. Analyze and interpret stories by identifying emerging themes and patterns.
10. Compare and contrast the continuity and changes of a local place over time.
11. Explore the place through three ways of knowing: intuition, fact finding and pattern making
12. Create a celebration of the unique cultural character of a place.
13. Preserve regional history and community memory through art, literature, storytelling, photography, journal observations and role plays.
14. Document and record stories in an anthology.
15. Produce individual and collective visioning statements and images

The School Building

16. Research the environmental, social and economic impact of the building and

operations (inputs and outputs) of their school on their town and on the world, and make recommendations for improving performance.

17. Identify the sources and sinks of materials and energy used in the school.

18. Conduct a triple bottom line impact analysis on the inputs and outputs and on proposed alternatives.

19. Provide evidence of skill development including: data gathering, data collection, organization, interviewing, prediction, estimation, meeting scheduling.

20. Communicate accurately and effectively their findings (oral presentation, use of tools i.e., power point, spreadsheets, graphs, role play, mural, song, etc.).

21. Transfer what they have learned to another context (home, other buildings, etc.).

Develop their school as a green school

22. Engage in goal setting/future visioning.

23. Identify indicators of success.

24. Produce an assets and liabilities inventory.

25. Determine the rights, roles and responsibilities associated with achieving success.

26. Build a model of a green school as a prototype for their school.

27. Design, plan, implement and assess green school initiatives.

Consumption Connection

28. Demonstrate an awareness and understanding of the impact of their consumption choices (food, purchasing, energy, materials) on the health of a place and be able to make responsible decisions.

29. Record consumption practices over time.

30. Use critical thinking and questioning to understand the media's role in shaping and influencing consumption patterns.

31. Describe the changes in consumption practices from an historical perspective, compare and contrast them with today's, and design the characteristics of sustainable consumption practices in the future.

32. Use evidence to support the responsibility of their consumer decisions.

33. Design and present exhibits for a Sustainable Consumption Expo to their parents and interested community members.

LEGACY PROJECT: As a way of communicating their love and connection to the place in which they live (school, community-bio-region), students undertake a legacy project and create value by making an authentic contribution to that place.

34. Research, design, implement and assess a project of the student's own choosing that adds or creates value.
35. Demonstrate effectively addressing more than one problem at a time while minimizing the creation of new problems.
36. Develop the skills of upstream problem identification and win win win systems analysis of the project (use of archetypes, causal loop diagrams and computer models preferred).
37. Communicate effectively about the project to an authentic audience outside of school.
38. Teach about the project as a case study to students in a different grade level.